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SOME PERUVIAN MAXILLARIAS

BY

CHARLES SCHWEINFURTH

DURING THE PROCESS of working up the genus Maxillaria for the orchid flora of Peru, it has seemed advisable to record the following taxonomic and nomenclatorial notes, amplifications and corrections of previous descriptions. Also, in accordance with our present practice of regarding the genus Ornithidium as referable to Maxillaria, it has been necessary to make several new combinations. Furthermore, there are included the descriptions of six Maxillarias which appear to be new.

Maxillaria alticola *C. Schweinfurth nom. nov.*
Ornithidium serrulatum Lindley in Bentham Pl. Hartw. (1845) 153, non *Maxillaria serrulata* Ames & Correll, 1943.

In transferring the concept *Ornithidium serrulatum* to the genus Maxillaria, it should be noted that the epithet *serrulata* has been preoccupied and that therefore a new name must be used.

The original description of *Ornithidium serrulatum* is very brief and by itself is inadequate to furnish a definite conception of this species. Fortunately, there are in the Ames Herbarium an excellent photograph of the type specimen bearing an analytical drawing of the flower made by Lindley and also several recent Peruvian specimens. Therefore, in order to clarify the species, a few supplementary notes are given herewith.

Plant stout but small for its alliance. Stem stout, about 47 cm. or less in height, loosely forking with erect-ascending branches, entirely concealed by distichous imbricating sheaths or leaf-sheaths. Leaves elliptic-oblong to narrowly oblong (rarely ovate-oblong), acute or subacute, amplexicaul at the slightly narrowed base, up to 12 cm. long and 2.2 cm. wide (usually smaller), with the upper margins minutely serrulate. Flowers small, axillary, cupuliform, deep yellow. Sepals connate near the base. Dorsal sepal ovate, acute, concave, about 9 mm. long and 5.8 mm. wide. Lateral sepals oblong-ovate, very slightly oblique, a little longer and narrower than the dorsal sepal. Petals oblanceolate-oblong to cuneate-elliptic, abruptly acute or apiculate, about 7.3 mm. long and 3 mm. wide above. Lip sigmoid when viewed from the side, fleshy, distinctly shorter than the sepals; lower portion broadly cuneate, concave; median portion consisting of a pair of erect semiorbicular lobes separated by a fleshy more or less sulcate callus; anterior portion subquadrate-ovate, apparently retuse, with a short but prominent conical boss beneath. Column small, incurved and dilated above, produced into a short foot. Ovary slender, triquetrous, developing into a triquetrous-ellipsoid fruit.

ECUADOR: in the Cordillera near Loxa, *Hartweg 838* (TYPE); Loja, fide Schlechter in Fedde Repert. Beih. 8 (1921) 151.

VENEZUELA: Merida, fide Schlechter in Fedde Repert. Beih. 6 (1919) 90.

PERU: Huánuco, between Huánuco and Pampayaco (Pampayacu), January 13, 1927, *Ryozo Kanehira 317a, 332;* Playapampa, at about 2700 meters altitude, "wet rocky montaña edge," June 16–24, 1923, *J. Francis Macbride 4886;* same locality, altitude and date as the last, "sphagnum bank," *Macbride 4896.*

Maxillaria arbuscula *Reichenbach filius* in Bonpl. 4 (1856) 213.

Fernandezia punctata Ruiz & Pavon Syst. Veg. (1798) 239.

The examination of typical material of *Fernandezia* *punctata* from the Madrid Herbarium shows that it represents a true Maxillaria of the caulescent many-leaved type entirely destitute of pseudobulbs and that it should be transferred to the latter genus. However, the epithet *punctata* is preoccupied by *Maxillaria punctata* Lodd. and another name is thus necessitated.

Fortunately, *Fernandezia punctata* seems to be referable to *M. arbuscula*, which was noted by Reichenbach as "Fernandezia del Peru." The only differences are that in *Maxillaria arbuscula* the leaves were described as up to 7.6 cm. long and 9 mm. wide (those of *Fernandezia punctata* being up to 6.4 cm. long and 6 mm. wide) and the callus on the lip is noted as linear, depressed and retuse, whereas that of *Fernandezia punctata* is oblong and much more conspicuous above with a rounded apex.

Maxillaria aurea (*Poepp. & Endl.*) *L. O. Williams* var. **gigantea** (*Lindl.*) *C. Schweinfurth comb. nov.*

Ornithidium giganteum Lindley in Bentham Pl. Hartw. (1845) 153.

Ornithidium bolivianum Schlechter in Fedde Repert. 27 (1929) 78.

A series of recent collections in the Ames Herbarium from Colombia, Peru and Bolivia agree well with an excellent photograph from the Lindley Herbarium of the type of *Ornithidium giganteum* which bears a floral analysis and with the description.

A perusal of this evidence indicates that *O. giganteum* seems to be merely a variety of *O. aureum*, as typified by Poeppig and Endlicher in Nov. Gen. ac Sp. 1 (1836) 57, t. 96 and described by Cogniaux in Martius Fl. Bras. 3, pt. 6 (1904) 89. It differs only in having the lip obscurely 3-lobed with the lobules consistently more or less erose-denticulate. The apical portion seems to vary from being relatively small to being subequal to the lateral lobules.

Although the type of *Ornithidium giganteum* came from Ecuador (near Loxa), later collections show that this plant is rather frequent and variable throughout the northwestern portion of South America. A collection noted as epiphytic (not terrestrial as often specified) from the high altitude of 3000–3300 meters (*F. W. Pennell 14119*) has very stout stems of uncertain height with relatively short broad leaves, up to 19.8 cm. long and 3.4 cm. wide, which are commonly conduplicate throughout and are more or less distichously imbricating.

The plant described as *Ornithidium bolivianum* Schltr., of which I have examined isotype material, appears to represent the usual form of *O. giganteum.*

Maxillaria brachypetala *Schlechter* in Fedde Repert. Beih. 9 (1921) 102; ex Mansfeld in Fedde Repert. Beih. 57 (1929) t. 125, nr. 489.

A recently examined collection referable to this species shows several discrepancies from the description and from the later analysis.

The leaves, which vary from oblong to elliptic-oblong, reach a maximum length of 28 cm. and a width of 4.5 cm., whereas those of the type are described as ligulate and about 15–18 cm. long and 3–4 cm. wide.

The petals are not ligulate as described, but distinctly narrowly spatulate as figured.

The base of the lip is not long-cuneate, as shown in the figure, but subrounded. Consequently the lateral lobes are semiovate rather than triangular as shown and described.

Cuzco: Prov. Convención, Hda. Amaibamba, at 2000 meters altitude, epiphyte, February 1943, *C. Vargas 3418.*

Maxillaria caespitosa *C. Schweinfurth nom. nov.*
Ornithidium dolichophyllum Schlechter in Fedde Repert. Beih. 9 (1921) 106; ex Mansfeld in Fedde Re-

pert. Beih. 57 (1929) t. 126, nr. 495, non *Maxillaria dolichophylla* Schltr. (1912).

In referring *Ornithidium dolichophyllum* to the genus Maxillaria, a new epithet is required owing to the previous appearance of the combination *Maxillaria dolichophylla.*

In examining a flower from the type number, certain discrepancies from the description and from the analysis appear. The sepals are not oblong-ligulate as described and figured, but elliptic-lanceolate; and the petals are not subobtuse, but acute.

Maxillaria calantha *Schlechter* in Fedde Repert. Beih. 9 (1921) 102; ex Mansfeld in Fedde Repert. Beih. 57 (1929) t. 125, nr. 490.

In comparing isotype specimens of *Maxillaria calantha* with the description and with the analytical figure of the flower, certain additions and corrections are found to be necessary.

The leaf, which is not mentioned in the description, consists of a petioled blade; the lamina is elliptic-oblong or narrowly elliptic, subacute to broadly obtuse, thickly coriaceous and up to 26 cm. long and 6.8 cm. wide; the petiole is more or less stout, channelled, up to 8.5 cm. long. The petals are linear-lanceolate and lack the constriction below the middle which is shown in the drawing. The lip has an ovate or triangular-ovate terminal lobe rather than a suborbicular lobe as shown in the drawing and the disc bears a triangular callus (neither described nor shown).

Maxillaria cornuta *C. Schweinfurth sp. nov.*

Herba parvula, probabiliter epiphytica. Rhizoma repens cum pseudobulbis subapproximatis. Pseudobulbi complanato-ovoidei, unifoliati. Folia oblanceolato-linearia vel oblanceolato-oblonga, apice irregulariter bilobato rotundata, infra sensim angustata, nitentia. Scapi laterales, breves, uniflori, vaginis ventricosis imbricatis omnino obtecti. Perianthii segmenta patentia. Sepalum dorsale oblongo-lanceolatum, acutum, dorso carinatum. Sepala lateralia oblique oblongo-lanceolata, acuta, ecarinata, basi dilatata et cum columnae pede mentum longum formantia. Petala lanceolato-linearia, multo minora, apice valde obtusa, super medium utrinque leviter constricta. Labellum in positu naturali arcuato-recurvatum, super medium trilobatum; lobi laterales erecti, semiobovati; lobus medius subquadratus, leviter retusus, planus. Columna in pedem longum producta.

Plant small but with comparatively large flowers, apparently epiphytic. Rhizome creeping, slender, provided with numerous stout fibrous glabrous roots. Pseudobulbs more or less crowded, complanate-ovoid, unifoliate, finely rugose in the dried specimen, up to 1.2 cm. long, subtended by a few distichous fleshy sheaths. Leaves variable, oblanceolate-oblong or oblanceolate-linear, rounded at the apex with a somewhat unequally bilobed apiculate tip, gradually narrowed to a conduplicate scarcely petioled base, coriaceous, shining above, up to 11.6 cm. long, 0.9–1.4 cm. wide, with the mid-nerve prominently sulcate above and carinate beneath. Inflorescences 1-flowered, short, lateral, basal, much shorter than the mature leaves, entirely concealed by several distichous imbricating sheaths which are ventricose, apically truncate and apiculate and dorsally carinate. Flowers with spreading segments. Sepals and petals fleshy-thickened above. Dorsal sepal oblong-lanceolate, acute, apiculate, navicular, dorsally carinate especially above, 1.8–1.9 cm. long and 6 mm. wide. Lateral sepals obliquely oblong-lanceolate, acute, ecarinate, lightly decurved, 1.7–1.8 (rarely 1.4) cm. long, triangular-dilated at the base and long-decurrent on the column-foot to form a mentum 0.9–1 cm. long. Petals linear-lanceolate, oblique, broadly obtuse and minutely apiculate, lightly constricted on each side near the thickened apex, 1.2–1.5 cm. long, about 3 mm. wide below the middle. Lip erect, parallel to the column, recurved and about equaling the lateral sepals in natural position, conspicuously 3-lobed above the middle, about 1 cm. wide when expanded, adnate to the column-foot near its apex; lateral lobes erect in natural position, semiobovate with a minute broadly rounded free portion which is irregularly dentate; mid-lobe subquadrate, lightly retuse at the subtruncate apex, flat, 7–8 mm. long, about 6 mm. wide; disc traversed through the lower half by an oblong-linear tricarinate callus. Column lightly arcuate, abruptly clavate above when viewed from the side, about 1 cm. long at the back, extended into a foot which is subequal to the column.

This species is apparently allied to *Maxillaria breviscapa* Poepp. & Endl., but has dissimilar petals and lip. It has much smaller flowers than *M. Koehleri* Schltr., with different petals and lip. It diverges from *M. Baumanniana* Schltr. in having smaller flowers, different petals, a long mentum and a dissimilar mid-lobe of the lip.

The specific name is in allusion to the spur-like mentum.

Junín: Chanchamayo Valley, "1924–1927," *Carlos Schunke s.n.* (Type in Herb. Field Mus. No. 571636); same locality, at 1800 meters altitude, October "1924–1927," *Schunke s.n.;* same locality, at 1800 meters altitude, October 1923, *Schunke 558.* (This collection differs from the usual form in having longer scapes and larger flowers which are very imperfect); Schunke Hacienda, above San Ramón, at 1300–1700 meters altitude, in dense forest, September 1925, *Schunke A70.*

Maxillaria crassicaulis *C. Schweinfurth nom. nov.* *Ornithidium Weberbauerianum* Kränzlin in Fedde Repert. 1 (1905) 91, non *Maxillaria Weberbaueri* Schltr. 1921.

In transferring *Ornithidium Weberbauerianum* to the genus Maxillaria, I find it advisable to choose a new epithet, as given above.

As compared with the type description, a photograph of authentic material in the Berlin Herbarium (*Weberbauer 6936*) distributed as the type, other specimens of this number and additional collections in the Ames Herbarium show certain discrepancies.

The leaves are described as ligulate or broadly linear, acuminate and bilobed at the apex, with a maximum width of 1.8 cm. However, in *Weberbauer 6936* and in the other collections referable to this concept, the leaves vary from oblong-lanceolate to oblong-ovate and are sharply acute (never acuminate nor bilobed), and some of the leaves attain a width of 2.6 cm.

Of even more importance, the type description cites the inflorescence as consisting of 3- to 4-flowered racemes —a character sharply at variance with the 1-flowered inflorescence of both Ornithidium and Maxillaria. However, our specimens have 1-flowered (commonly fascicled) inflorescences, in conformity with the requirements.

This species appears to be limited to the Departments of Junín and Cuzco in Peru.

Maxillaria cuzcoensis *C. Schweinfurth sp. nov.*

Herba variabilis. Pseudobulbi approximati, valde complanati, cylindracei, apice obliquo unifoliati. Folium petiolatum; lamina elliptico-oblonga vel anguste lanceolato-oblonga, acuta, basi cuneata, plusminusve coriacea; petiolus conduplicatus. Scapi numerosi, laterales, basales, uniflori, pedunculo vaginis separatis ventricosis ornato. Flos mediocris. Sepalum dorsale anguste lanceolato-oblongum, acutum, basi concavum, supra dorso carinatum. Sepala lateralia oblique triangulari-oblonga, sepalo dorsali similia, mentum conspicuum formantia. Petala

sepalis lateralibus similia sed minora. Labellum erectum, lateraliter visum leviter sigmoideum, supra medium leviter sed distincte trilobatum; pars basalis profunde concava, intus medio carina anguste oblonga tricarinata ornata; pars terminalis incrassata, ovata vel oblonga, subacuta. Columna brevis, leviter arcuata, in pedem paulo longiorem producta.

Plant variable, medium-sized to large. Rhizome apparently abbreviated, woody. Roots numerous, fibrous, slender, glabrous. Pseudobulbs approximate, strongly complanate, cylindric, unifoliate at the oblique apex, finely striate-rugose in the dried specimen, up to 6.4 cm. high, surrounded and in youth entirely concealed by several distichous imbricating sheaths of which the apical pair is often leaf-bearing. Leaf petioled; lamina elliptic-oblong to narrowly lanceolate-oblong, acute, cuneate below, more or less coriaceous, with the mid-nerve sulcate above and conspicuously carinate beneath, 10 to over 32 cm. long, 1.6–4.1 cm. wide; petiole conduplicate, about 1.7 cm. long. Scapes lateral, basal, numerous, 1-flowered, commonly much shorter than the leaves, suberect to lax; peduncle filiform, about 18.5 cm. or less long, mostly concealed by eight or less tubular ventricose sheaths of which the uppermost is up to 2.8 cm. long; pedicellate ovary slender, somewhat exceeded by a bract which is similar to the sheaths of the scape. Flower medium-sized, white, often with the lip pale rose to violet at the base. Dorsal sepal narrowly lanceolate-oblong, acute, concave at the base, with revolute margins, 2.5–2.7 cm. long, 6–8 mm. wide near the base when expanded, dorsally carinate above the middle. Lateral sepals obliquely oblong-lanceolate or triangular-oblong, acute or apiculate, dorsally carinate near the apex, forming with the column-foot a prominent mentum, 2.5–2.8 cm. long, 8–9 mm. wide at the base. Petals similar to the lateral sepals but markedly smaller, obliquely oblong-lanceolate, acute, about 2.1 cm. long and 4.6 mm. wide near the base. Lip erect and parallel to the column in natural position, 1.3–1.4 cm. long, lightly sigmoid when viewed from the side, lightly but distinctly 3-lobed above the middle; lower portion deeply concave with erect sides, about 1 cm. long; terminal portion or mid-lobe much smaller, very fleshy, ovate to oblong, subacute when expanded, more or less sulcate above and carinate beneath, with revolute margins; disc in the middle with a short median oblong callus flanked by a pair of thickened lines, pubescent at the base. Column short and stout, lightly arcuate, somewhat clavate when viewed from the side, 6–6.5 mm. long at the back, with an erose-margined clinandrium which is 3-dentate at the apex, extended into a slightly longer foot.

This species seems to be allied to the Ecuadorian *Maxillaria hastulata* Lindl., but varies in having the petioles much shorter than the leaves and scapes, differently colored flowers and in an apparently dissimilar lip. It also has a very different lip from that of the Colombian *M. pulla* Linden & Reichb.f.

Cuzco: Habitat unrecorded, 1931, *C. Bues s. n.;* Prov. Quispicanchi, Chaupichaca, Marcapata Valley, at 1800–1900 meters altitude, "mixed formation of shrubwoods and grass steppe on stony places," February 19–20, 1929, *A. Weberbauer 7834* (TYPE in Herb. Field Mus. No. 605347; isotype in Herb. Ames No. 61907); Hda. Itío, Marcapata, at 2000 meters altitude, in open rocky places, January 27, 1943, *C. Vargas 3126;* Prov. Convención, Hda. Potrero, Sapan-Sachayocc, at 2200 meters altitude, epiphyte in deep forest, March 5, 1942, *Vargas 2527*.

Maxillaria disticha (*Lindl.*) *C. Schweinfurth comb. nov.*

Ornithidium distichum Lindley in Bentham Pl. Hartw. (1845) 153.

Since the description of *Ornithidium distichum* is too inadequate to afford a clear conception of the species, it seems advisable to give a few additional notes based on a photograph of the type which is in the Lindley Herbarium at Kew.

Rhizome relatively slender, sparingly branched, bearing stems at intervals of 6 to 9 cm. Stems short, robust, simple, arcuate, wholly destitute of pseudobulbs, entirely concealed by distichous densely imbricating leaf-sheaths (the blades deciduous below), up to 9 cm. long. Leaves obtuse to subacute, sessile at the conduplicate base, spreading, up to 3.8 cm. long and 8 mm. wide. Flowers small, axillary. Dorsal sepal lanceolate or ovate-lanceolate, concave, about 6 mm. long and 3.8 mm. wide. Lateral sepals oblong-lanceolate or triangular-lanceolate, oblique, forming a short rounded mentum.

"PERU" (?), fide Schlechter in Fedde Repert. Beih. 9 (1921) 166.
ECUADOR: near Loxa (TYPE).

Maxillaria elegantula *Rolfe* in Kew Bull. (1898) 196.

Maxillaria dichroma Rolfe in Kew Bull. (1898) 197.

Judging by the descriptions of these species supplemented by excellent photographic records in the Ames Herbarium of the types, these concepts appear to be inseparable.

Aside from the fact that *M. elegantula* has sometimes a slightly longer scape and floral segments than *M. dichroma*, the only discrepancy is a slight difference in the reported color of the flowers.

With the appearance of one certain and two probable collections of *Maxillaria elegantula* from Peru, it seems advisable to give a few supplementary remarks.

There appears to be a stout creeping rhizome (not mentioned in the description of either concept). The pseudobulb (also neither mentioned nor shown in the photographs of the types) is narrowly complanate-ellipsoid and 5.7 cm. or less long, with sometimes an abruptly narrowed apical portion. Surrounding the pseudobulb is at least one pair of unequal distichous conduplicate sheaths of which one is leaf-bearing. The lamina of the leaf is elliptic-oblong, not oblong-lanceolate as described, and measures 29 cm. in length and 5 cm. in width, whereas those of the types appear to be 23.75 cm. or less long and 4 cm. or less wide. The lateral sepals and petals seem to be lanceolate or oblong-lanceolate when the revolute margins are expanded (not triangular-oblong as described). The lip appears to be oval in outline, rather than obovate-oblong as cited.

Cuzco: Prov. Convención, "alturas de Pintobamba," at 2400 meters altitude, in humus of open forest, flower white with dark blue lip, March 3, 4, 1943, *C. Vargas 3287*.

Maxillaria exaltata (*Kränzl.*) *C. Schweinfurth comb. nov.*

Camaridium exaltatum Kränzlin in Engler Bot. Jahrb. 37 (1906) 386.

After examining an excellent photograph of the type collection of *Camaridium exaltatum* in the Ames Herbarium, there are evident certain discrepancies from the type description. First in importance, I am unable to detect any suggestion of pseudobulbs which are described in the diagnosis (l. c.). Again the sepals appear to be oblong-lanceolate (not linear) with both dorsal and lateral sepals about 1.8 cm. long (the lateral sepals are described as 2.3 cm. long).

A recent collection from Sandia in the Province of Puno (*McCarroll 123*) has somewhat smaller flowers than typical, the sepals being 1.5–1.7 cm. long. Moreover, its lip differs in having a broadly ovate or ovate-triangular (not oblong) mid-lobe and in the disc bearing only a small oblong sulcate (not an elongate navicular) callus.

Maxillaria floribunda *Lindley* in Bentham Pl. Hartw. (1845) 154.

In accordance with a photograph of the type of this species from the Lindley Herbarium at Kew and with a recent collection (*Vargas 2650*) which seems to be surely referable to this concept, certain corrections and amplifications of the original description appear to be advisable.

Both the type and the collection show that the leaves are elliptic to oblong, rather than ovate-oblong as specified. *Vargas 2650* also shows a well-defined pseudobulb (that of the type specimen is obscure at best) which is complanate-ellipsoid, about 3.5 cm. long, unifoliate and surrounded by several distichous conduplicate leaf-bearing sheaths. The peduncle in this collection measures about 19.5 cm. or less long, whereas the description notes the scapes as "tripollicares," signifying 7.6 cm. The sepals and petals appear to be decurved with strongly revolute sides. The sepals, which are rather short-acuminate, are linear-oblong (dorsal) to linear-lanceolate (lateral) and about 6.4 cm. long and 8 mm. wide. The petals are linear-lanceolate and similar to the lateral sepals, but much smaller. The relatively small lip appears to be subquadrate-oval when expanded and about 1.4 cm. long; the lobing seems to be near the apex, the mid-lobe is transversely broad-oblong or reniform and retuse, unlike that of the pen-drawing on the type sheet which is elliptic-ovate. The column is about 7 mm. long, produced into a bisulcate foot.

Cuzco: Prov. of Urubamba, Tuncapata-Santa Rita, at 2800 meters altitude, epiphyte in forest, perianth white, March 28, 1942, *C. Vargas 2650*.

Maxillaria funicaulis *C. Schweinfurth sp. nov.*

Herba robusta, caulescens. Pseudobulbi rari, complanato-cylindracei, diphylli. Caules vaginis numerosis, distichis, conduplicatis, valde imbricatis omnino obtecti.

Folia oblonga vel ligulata, apice bilobulato rotundato-obtusa, sessilia vel breviter petiolata. Inflorescentiae breves, uniflorae, in caulinarum vaginarum axillis. Flores parvi, aurei. Sepalum dorsale ovato-oblongum, subacutum, concavum. Sepala lateralia oblonga vel ovato-oblonga, subacuta, paulo minora. Petala ovato-oblonga, obliqua, apice late rotundata. Labellum ovato-oblongum, apice rotundatum vel truncatum, basi rotundatum, super medium leviter angustatum cum lateribus erectis; discus medio conspicue callosus. Columna perbrevis, in pedem brevem extensa.

Plant large, growing on rocks. Stems elongate, bearing distant pseudobulbs, entirely concealed by a series of distichous sheaths which are densely imbricated, conduplicate, and become gradually larger upward and articulated to small immature leaf-blades. Pseudobulbs complanate-cylindric, somewhat clavate in the dried specimen, bifoliate, 4.5–6 cm. long, finely multistriate when dry, partially concealed on each side by one or more conduplicate sheaths the uppermost of which bear conduplicate blades. Leaves oblong to ligulate, the larger ones sessile to distinctly petioled; lamina obtuse to rounded and more or less unequally bilobed at the apex, somewhat narrowed below, subcoriaceous, 18–26 cm. long, up to 2.9 cm. wide, with the mid-nerve rather conspicuous beneath; petiole (if present) up to 4.5 cm. long, slender, channelled. Inflorescences numerous, short, erect, 1-flowered, in the axils of the cauline sheaths; peduncle about 2.5 cm. long, appressed, entirely covered by several scarious imbricating sheaths, wholly or mostly hidden by the stout imbricating conduplicate cauline sheaths; pedicellate ovary prominently exserted, slender-cylindric, plurisulcate in the dried specimen, about 3.5 cm. long, surrounded at the base by an appressed infundibuliform scarious sheath about 1.5 cm. long. Flowers small for the genus, yellow, campanulate. Dorsal sepal ovate-oblong, concave, subacute, with incurved apical margins, about 14 mm. long and 6.4 mm. wide when expanded, many-nerved. Lateral sepals oblong or ovate-oblong, subacute, about 13.3 mm. long and 5.9 mm. wide, slightly oblique, many-nerved. Petals obliquely ovate-oblong, abruptly rounded with a minute conical dorsal thickening at the apex, about 10 mm. long and 5 mm. wide, minutely ciliolate, slightly recurved above. Lip erect, gently arcuate-recurved with the sides of the lower portion erect in natural position, very shortly clawed, simple, ovate-oblong, lightly narrowed on each side above the middle with incurved margins, rounded at the base, broadly rounded or subtruncate at the apex, about 8.7 mm. long and 4 mm. wide below when expanded; disc through the basal half with an obscure central thickening which terminates in a conspicuous rounded callus in the center of the lip. Column very short and stout, clavate, about 6 mm. high at the back, produced at right angles into a prominent foot which is markedly shorter than the column.

This species is allied to *Maxillaria spilotantha* Reichb. f. from Venezuela and Ecuador, but has much larger leaves, a quite different mode of flowering and somewhat smaller flowers. It appears to be very closely related to the Colombian *M. Schnitteri* Schltr., but has a much smaller dissimilar lip.

The specific name is in allusion to the rope-like appearance of the stem.

Cuzco: Prov. Quispicanchi, Marcapata, Itío to Murayaca, at 1960 meters altitude, January 28, 1943, *C. Vargas 3137* (Type in Herb. Vargas; isotype in Herb. Ames No. 62111).

Maxillaria graminifolia (*HBK.*) *Reichenbach filius* in Walpers Ann. 6 (1863) 538.

Isochilus graminifolius Humboldt, Bonpland & Kunth

Nov. Gen. et Sp. 1 (1816) 340, t. 78—Lindley in Bot. Reg. 27 (1841) sub t. 1 (as *graminifolium*).

Camaridium graminifolium Reichenbach filius in Linnaea 22 (1849) 857.

Maxillaria Matthewsii Reichenbach filius in Walpers Ann. 6 (1863) 539, non Lindley 1845.

Although I have seen no material of typical *Maxillaria Matthewsii* Reichb.f., there is in the Ames Herbarium a floral analysis of this concept from the Reichenbach Herbarium.

In addition, I have examined several Peruvian collections referable to *M. graminifolia* and these specimens approximate the description and floral drawing of *M. Matthewsii* above cited, the lip of the former concept being extremely variable.

Until there is available a more detailed example of *M. Matthewsii* Reichb.f., it seems advisable to relegate this concept to synonymy. This action is sustained by the fact that Lindley considered this species as originally forming a part of the concept recognized by him as *Isochilus graminifolium.*

Maxillaria heteroclita *Poeppig & Endlicher* Nov. Gen. ac Sp. 1 (1836) 37, t. 63—Cogniaux in Martius Fl. Bras. 3, pt. 6 (1904) 27.

The several drawings of the flower illustrating the original description of this concept appear to be a close match for the flower of *Zygopetalum* (§ Warscewiczella) *rhombilabium* C. Schweinf. which is described and illustrated in Am. Orch. Soc. Bull. 12 (1944) 422.

On the other hand, *Maxillaria heteroclita* is described and shown with a distinct unifoliate pseudobulb (such as is typical of one group of the variable genus Maxillaria), whereas *Zygopetalum rhombilabium* lacks any pseudobulb and has a fan-like cluster of several leaves. As before mentioned, however, the flower of *M. heteroclita* is that of a true Zygopetalum.

Appended to the original description of *Maxillaria heteroclita* are these words (translated from the Latin): We are very sorry that we are unable to add further data to this rather imperfect description . . . . of a very remarkable and elegant species. For the specimens were among the most scanty of our herbarium and we found them badly eaten by insects. The figure was made near the living plant in its native place.

It is significant that *Maxillaria heteroclita* is the only orchid described in Nov. Gen. ac Sp. I which bears no mention of its habitat. Doubtless the concept came from Peru like the several other Maxillarias described in that work. It seems inconceivable, that two species from the same general region should have nearly identical floral segments and yet belong to quite different genera. The wise course, therefore, appears to be to consider *Maxillaria heteroclita* to be a concept of dubious validity.

Maxillaria huancabambae (*Kränzl.*) *C. Schweinfurth comb. nov.*

Ornithidium Huancabambae Kränzlin in Engler Bot. Jahrb. 54, Beibl. 117 (1916) 29.

In the examination of isotype material of this species (*Weberbauer 6098*), certain discrepancies from the description and additions to the diagnosis may be noted.

In the first place, the roots do not appear everywhere ("passim") but are concealed as parallel strands within the sheaths of the rhizome. Again the pseudobulbs appear to be about 2 cm. (not 1.5 cm.) distant. Careful inspection shows that they are closely invested by a thin membranaceous sheath which extends as an irregular narrow cup around the basal portion of the leaves. Rarely the pseudobulbs are 3-leaved at the apex. The leaves are prevailingly elliptic or elliptic-oblong, rather than oblong-lanceolate as described. The sepals are oblong-ovate and about 7.9 mm. long, whereas the type description cites them as oblong-lanceolate or broadly oblong and 7 mm. long. The dorsal sepal is 4 mm. (not 1.5 mm.) wide and the lateral sepals are slightly over 4 mm. (not 3 mm.) wide. The petals are 2 mm. (not 1 mm.) wide. The lip is approximately elliptic-ovate (not obovate) and is 4 mm. wide when expanded (not 2.5 mm. in front).

Maxillaria huancabambae (*Kränzl.*) *C. Schweinf.* var. **cuzcoensis** *C. Schweinfurth var. nov.*

This variety differs from the species in the following particulars. Leaves relatively slender, linear-oblong to narrowly elliptic-oblong, up to 3.8 cm. long, 4–5 mm. wide; those of the type are elliptic to oblong-elliptic and up to 3.2 cm. long, 6–9 mm. wide. Flowers white; those of the type golden- to orange-yellow. Sepals somewhat narrower than in the type. Lateral lobes or auricles of the lip consisting of indistinct dilations; those of the type distinct and triangular-ovate. Column very short, about 1.5 mm. long at the back; that of the type much longer, about 2.7 mm. long at the back.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, at 2200 meters altitude, epiphyte in dense forest, March 5, 1942, *C. Vargas 2253* (Type in Herb. Ames No. 61950).

Maxillaria infausta *Reichenbach filius* in Bonpl. 3 (1855) 216.

After an examination of a drawing of this concept including a rough sketch of the flower from the Reichenbach Herbarium at Vienna and especially of an actual specimen of what doubtless is an isotype bearing the notation "Peruvia Matthews 1862," it seems advisable to publish a few clarifying remarks.

Plant medium-sized, caulescent. Stem entirely concealed by imbricating loose distichous leaf-bearing sheaths, sometimes once forking near the base with subparallel branches. Leaves numerous, distichous, spreading-ascending, oblong or elliptic-oblong, often up to 3.7 cm. long and 7 mm. wide, sessile. Inflorescences solitary in the upper (but not uppermost) axils, strict, with very short peduncles and long-exserted pedicellate ovaries. Flowers small. Dorsal sepal ovate-oblong, abruptly acute or apiculate at the rounded apex, about 9.2 mm. long and 4.2 mm. wide. Lateral sepals similar, oblique, complicate-acute and apiculate, very slightly shorter and narrower than the dorsal sepal. Petals broadly oblong or obovate-oblong (rather than "ovate"), obtuse, shorter than the sepals but equally wide. Lip obovate-oblong in outline, constricted on each side (i.e. lobulate), rounded-truncate and lightly retuse in front, rounded-cuneate below, about 7 mm. long and 4.4 mm. wide near the middle; callus on the disc sometimes obscure. Column about 2.8 mm. long at the back, with a very short foot.

Maxillaria longibracteata (*Lindl.*) *Reichb.f.* var. **grandiflora** (*Lindl.*) *C. Schweinfurth var. nov.*

Isochilus grandiflorus Lindley in Bot. Reg. 27 (1841) sub t. 1 (as *grandiflorum*).

Camaridium grandiflorum Schlechter in Fedde Repert. Beih. 9 (1921) 165.

H. G. Reichenbach states (in Walpers Ann. 6 (1863) 540) that he had carefully inspected the type of *Isochilus grandiflorus*, and, as a result, he referred this concept to the synonymy of *Maxillaria luteorubra* Reichb.f. (*Camaridium luteo-rubrum* Lindl.).

Judging by the original description and a pen drawing of the flower of *Isochilus grandiflorus* from the Lindley Herbarium, I cannot subscribe to this treatment. *Isochilus grandiflorus* differs from *Camaridium luteo-rubrum*, of which there is in the Ames Herbarium a record of the type bearing a pen drawing of the lip, in two rather striking particulars. On the flower of the former species, the upper bract is indicated as extending up to one half the length of the dorsal sepal and the petals are noted as about half as long as the sepals. In *Maxillaria luteorubra*, on the other hand, the upper bract is much shorter than the pedicellate ovary and the petals are not much shorter than the sepals.

The disc of the lip of *Isochilus grandiflorus* is described as naked, but the fact that Reichenbach treated this concept as a synonym of *Maxillaria luteorubra* (which is clearly marked with a basal callus on the lip), shows either that Lindley failed to observe this feature or that the callus had become detached as sometimes occurs in specimens of this group.

It seems to me preferable that the concept represented by *Isochilus grandiflorus* should be treated as a variety of *Maxillaria longibracteata*, a species which it closely resembles, differing chiefly in having distinctly narrower leaves.

Maxillaria longibracteata (*Lindl.*) *Reichb.f.* var. **luteorubra** (*Lindl.*) *C. Schweinfurth var. nov.*

Camaridium luteo-rubrum Lindley Orch. Linden. (1846) 22, no. 114.

Maxillaria cassapensis Reichenbach filius in Walpers Ann. 6 (1863) 539—Cogniaux in Martius Fl. Bras. 3, pt. 6 (1904) 76.

Maxillaria luteorubra Reichenbach filius in Walpers Ann. 6 (1863) 539.

Camaridium cassapense Schlechter in Fedde Repert. Beih. 9 (1921) 165.

Records of typical *Camaridium luteo-rubrum* in the Ames Herbarium show that this concept differs from

Maxillaria longibracteata (*Camaridium longibracteatum* Lindl.) chiefly in having markedly narrower leaves which vary from narrowly oblong-lanceolate to linear-oblong. The uppermost bract on the peduncle also is much shorter than the pedicellate ovary and not subequally long as in *M. longibracteata.*

In the Ames Herbarium there is an Ecuadorian collection (*Penland & Summers 243*) which differs from typical *C. luteo-rubrum* in having narrow linear-lanceolate leaves and rather smaller flowers than usual in that concept, but the general contour of the floral segments is closely similar and the lip is an exact counterpart of that drawn on the type sheet of *C. luteo-rubrum.*

The concept described as *Maxillaria cassapensis,* which is represented in the Ames Herbarium by drawings of the habit and floral analyses from the Reichenbach Herbarium, is also a narrow-leaved plant with loosely branching stems, and, according to the description, with bracts subequaling the pedicellate ovary. Whether the stems are simple as in *Camaridium luteo-rubrum* or branched as in *Maxillaria cassapensis* is a highly variable character and consequently unimportant. In the drawing of the type, also, the upper bract is shown as much shorter than the pedicellate ovary, as in *Camaridium luteo-rubrum,* and not subequaling it as described. Finally, the floral analysis of *Maxillaria cassapensis* shows no discernible discrepancy from the flower of *C. luteo-rubrum.* It appears to be desirable, therefore, to treat the concepts typified by *Camaridium luteo-rubrum* and *Maxillaria cassapensis* as variants of the polymorphic species, *M. longibracteata.*

Maxillaria multicaulis (*Poepp. & Endl.*) *C. Schweinfurth comb. nov.*

Siagonanthus multicaulis Poeppig & Endlicher Nov. Gen. ac Sp. 1 (1836) 40, t. 69.

Ornithidium multicaule Reichenbach filius in Bonpl. 2 (1854) 18; in Walp. Ann. 6 (1863) 490.

Maxillaria nubigena (*Reichb.f.*) *C. Schweinfurth comb. nov.*

Ornithidium nubigenum Reichenbach filius in Walpers Ann. 6 (1863) 488; in Linnaea 41 (1876) 35.

The original and only prior collection of this species came from Pamplona, Colombia, about 1200 or more miles from the Peruvian collections cited below and at the much greater altitude of about 3000 meters.

Inasmuch as both of the descriptions of this concept are rather inadequate and give no reference to size, the following specific notes are now added.

Plant large, sprawling, loosely branched, the stout stem being mostly concealed by tubular rugulose sheaths of which the upper ones are more or less separated and leaf-bearing. At intervals of 11 to 20 cm., (often in the angle formed by the branches) are short stout strobiliform stems, up to 6 cm. long, concealed by several pairs of closely imbricating distichous scarious-margined leaf-sheaths. Leaves linear, long-acuminate, slightly narrowed toward the base, more or less falcate, rigid, coriaceous, appearing more or less convolute in the dried specimen, up to 30 cm. long and 1.1 cm. wide. Inflorescences numerous, abbreviated, 1-flowered, in the axils of the leaf-sheaths on the short strobiliform branches. Flowers small, deep pink to dark red, campanulate, with fleshy segments. Dorsal sepal oblong-ovate, acute, concave, about 7.5 mm. or less long, 3–3.7 mm. wide. Lateral sepals obliquely oblong-ovate, slightly smaller than the dorsal sepal. Petals oblong-elliptic, much smaller than the sepals. Lip much shorter than the sepals in natural position, sigmoid when viewed from the side, simple or nearly so, from a cuneate concave base gradually dilated in the middle forming a pair of upcurved semiorbicular lobules, then slightly contracted into an oblong-subquadrate sulcate anterior portion which is retuse at the apex; disc fleshy-thickened in the middle and near the apex. Column short, stout, prominently angled in front.

Ayacucho: Aina, between Huanta and Río Apurimac, at 750-1000 meters altitude, epiphyte in open woods, May 7, 17, 1929, *E.P.Killip & A.C.Smith 22612*—Junín: Chanchamayo Valley, at 1800 meters altitude, September 1929, *Carlos Schunke 1844;* same data, August 1930, *Schunke 1845.*

Maxillaria parvibulbosa *C. Schweinfurth sp. nov.* Herba terrestris, major. Pseudobulbi perparvi, saepissime aggregati, in sicco cylindracei, unifoliati. Folium conspicue petiolatum; lamina anguste oblonga vel elliptico-oblonga, acuta, basi cuneata; petiolus elongatus, gracilis, profunde sulcatus. Scapi laterales, basales, breves, tenues, uniflori, pedunculo vaginis laxis obtecto. Flos grandis. Sepalum dorsale lineari-lanceolatum, longe acuminatum, tubulari-involutum. Sepala lateralia anguste et oblique triangulari-lanceolata, acuminata, cum columnae pede mentum conspicuum formantia. Petala sepalis lateralibus similia sed minora. Labellum segmentis ceteris multo brevius, parte inferiore erecta, prope apicem profunde trilobatum; lobi laterales angustissimi, apice libero brevi rotundato; lobus medius elliptico-lanceolatus, crassus, marginibus valde undulatis. Columna brevis, a latere visa crassa, in pedem longum extensa.

Plant terrestrial, rather large. Roots fibrous, filiform, glabrous. Rhizome apparently short, creeping. Pseudobulbs commonly approximate, very small, obliquely cylindric or ellipsoid-cylindric and finely striate-rugose when dry, somewhat compressed, unifoliate, about 2 cm. or less long, more or less concealed and much surpassed by several distichous sheaths which waste into fibres.

Leaf conspicuously petioled; lamina linear-oblong or elliptic-oblong to narrowly oblong-lanceolate, acute, cuneate below, 14–21.4 cm. long, up to 2.9 cm. wide, subcoriaceous, with the mid-nerve sulcate above and conspicuously carinate beneath; petiole long, slender, channelled, 4–11 cm. long. Scapes lateral, basal, several, short, slender, lax to erect-ascending, 1-flowered, the peduncle with the pedicellate ovary up to 14 cm. long; peduncle mostly or entirely concealed by several loose tubular sheaths which are smaller and imbricated below; pedicellate ovary slender, concealed and slightly exceeded by a bract similar to the sheaths of the peduncle. Flower large, white and lilac-rose, with only slightly spreading segments. Dorsal sepal linear-lanceolate, long-acuminate, tubular-involute, up to 3.4 cm. long and 7.6 mm. wide across the concave basal part when expanded. Lateral sepals narrowly triangular-lanceolate, oblique and gently upcurved above, acuminate, adnate to the column-foot to form a prominent triangular mentum, up to 3.5 cm. long and 1 cm. wide at the base. Petals very similar to the lateral sepals, gently upcurved with a long-acuminate apex, about 2.9 cm. long and 4.5 mm. wide below. Lip much shorter than the sepals and petals, erect, parallel to the column, lightly recurved and up to 1.95 cm. long in natural position with the sides of the lower portion erect, deeply 3-lobed near the apex, sessile, elliptic-oblong in outline, about 6 mm. broad when expanded; lateral lobes long and narrow with a short ovate-rounded free apex; mid-lobe elliptic-lanceolate, obtuse, very fleshy through the middle, sulcate above and carinate beneath, with strongly undulate margins, about 6 mm. long; disc with an oblong-lanceolate sulcate callus in the middle, lightly pubescent and ecallose in the center near the base. Column short, stout, abruptly clavate and lightly arcuate when viewed from the side, nearly 8 mm. long at the back, produced into a somewhat longer narrow sulcate foot.

This species seems to be nearly allied to the Colombian *Maxillaria arachnites* Reichb.f. which has differently colored flowers with a much shorter broader lip. The lobing and proportions of the lip distinguish this species from *M. anatomorum* Reichb.f. The Colombian *M. vestita* Schltr. appears to lack distinct elongate petioles and to have a smaller dissimilar lip.

San Martín: Zepelacio, near Moyobamba, at about 1100 meters altitude, terrestrial in mountain forest, May 1934, *G. Klug 3618* (TYPE in Herb. Ames No. 61909; isotypes in Herb. Gray No. 70, in Herb. Field Mus. No. 753175 and in U.S. Nat. Herb. No. 157671).

Maxillaria pendula (*Poepp. & Endl.*) *C. Schweinfurth comb. nov.*

Scaphyglottis pendula Poeppig & Endlicher Nov. Gen. ac Sp. 1 (1836) 58, t. 98.

Ornithidium pendulum Cogniaux in Martius Fl. Bras. 3, pt. 6 (1904) 92.

Maxillaria purpurea (*Spreng.*) *Ames & Correll* var. **parviflora** (*Poepp. & Endl.*) *C. Schweinfurth var. nov.*

Scaphyglottis parviflora Poeppig & Endlicher Nov. Gen. ac Sp. 1 (1836) 58, t. 97.

Ornithidium vestitum Reichenbach filius in Walpers Ann. 6 (1863) 491, *partim*—Cogniaux in Martius Fl. Bras. 3, pt. 6 (1904) 95, *partim.*

Several authors, including Reichenbach filius and Cogniaux, have referred *Scaphyglottis parviflora* Poepp. & Endl. to the synonymy of *Ornithidium vestitum* or *Maxillaria purpurea* as the latter concept becomes when treated as a Maxillaria (cf. Ames & Correll in Bot. Mus. Leafl. Harvard Univ. 11 (1943) 16).

However, I feel reluctant to follow their example for the following reasons. *Scaphyglottis parviflora* is described and illustrated as usually having bifoliate pseudobulbs and a lip which terminates in an oblong apical lobe that appears to be distinctly smaller than the lateral lobes. On the other hand, *Ornithidium vestitum,* which was described by Swartz as *Epidendrum vestitum,* is noted by Fawcett & Rendle (Fl. Jam. 1 (1910) 122, 123) as having unifoliate pseudobulbs and a mid-lobe of the lip which is ovate and distinctly larger than the lateral lobes—a diagnosis made presumably after examining Swartz' type. Moreover, all of the other material referred to *Ornithidium vestitum* (from Central America and Peru) shows the same unifoliate pseudobulbs and a relatively large ovate mid-lobe of the lip.

It seems to be preferable, therefore, to follow Fawcett & Rendle's interpretation of *Ornithidium vestitum* and to consider this species as always having unifoliate pseudobulbs and a relatively large ovate mid-lobe of the lip. Following this interpretation, I am regarding *Scaphyglottis parviflora* as a variety of *Ornithidium vestitum,* and have made the proper varietal combination under Maxillaria.

Maxillaria ramosissima *Kränzlin* in Engler Bot. Jahrb. 54, Beibl. 117 (1916) 29.

Two isotypes of this species (*Weberbauer 6273*) in the Gray Herbarium and in the Herbarium of the Field Museum show certain disparities from the description.

The pseudobulbs are ellipsoid to pyriform-cylindric, rather than ovate, and up to 3 (not 2.5) cm. long. The leaves are up to 9 (not 8) cm. long. The peduncles bear sometimes as many as 15 (not 8–9) sheaths. The sepals are oblong-lanceolate and complicate-acute (not narrowly ovate-triangular and long-acuminate) and they are about 1.6 (not 2) cm. long. The petals are elliptic-linear (not lanceolate) and complicate-acute (not acuminate). The lip is oblong-obovate (not oblong), broadly rounded and lightly retuse (not obtuse), and the sides of the lower portion are erect and auriculiform; the disc lacks the three elevated lines which are described.

Maxillaria rufescens *Lindley* in Bot. Reg. 21 (1835) sub t. 1802; 22 (1836) t. 1848—Reichenbach filius in Saunders Refug. Bot. 2 (1870) t. 79 (var. *flavida*); 2 (1882) t. 133—Cogniaux in Martius Fl. Bras. 3, pt. 6 (1904) 12.

Maxillaria Abelei Schlechter in Fedde Repert. Beih. 9 (1921) 101; ex Mansfeld in Fedde Repert. Beih. 57 (1929) t. 125, nr. 488.

After careful consideration, it appears certain that *Maxillaria Abelei* should be included in the extremely variable and widespread species, *M. rufescens*. There are no morphological differences to distinguish the former concept, the only apparent discrepancies being in size. *M. Abelei* is a larger plant than the average specimen of *M. rufescens*, the leaf being often somewhat larger (especially broader) and the floral segments a little longer than any attributed to or observed in the latter species. Therefore, considering that the sepals of various forms of *M. rufescens* range from 0.8 to 2 cm. in length, it seems scarcely advisable to recognize as distinct the concept *M. Abelei* in which the sepals are designated as about 2.4 cm. in length.

In a recently examined Peruvian collection of *M. rufescens* (*G. Klug 10118*), the larger leaf is about 28.5 cm. long and 4.8 cm. wide (as compared with a maximum of 23 cm. long and 4.5 cm. wide in *M. Abelei*); the lateral sepals are about 2.4 cm. long (as in *M. Abelei*) and 9.5 mm. wide; the petals are about 2.3 cm. long (longer than in *M. Abelei*); the lip, which is slightly larger than that credited to *M. Abelei,* is about 2.1 cm. long and 1.2 cm. wide across the expanded lateral lobes; and finally the column is about 1.6 cm. long (contrasted with 1.1 cm. long in *M. Abelei*).

Although the pseudobulbs of *M. rufescens* are almost always crowded or approximate, I have seen one Peruvian collection (Dept. of Loreto, *G. Klug 10020*) which has the pseudobulbs 2 to 3 cm. distant.

Including its various forms, *Maxillaria rufescens* occurs from British Honduras and Guatemala to Costa Rica, in the West Indies and in South America south to Brazil and Peru (Prov. Loreto).

Maxillaria Tafallae (*Reichb.f.*) *C. Schweinfurth comb. nov.*

Scaphyglottis Tafallae Reichenbach filius in Linnaea 22 (1849) 855.

Ornithidium Tafallae Reichenbach filius in Bonpl. 2 (1854) 18.

Ornithidium dichotomum Schlechter in Fedde Repert. Beih. 7 (1920) 178; ex Mansfeld in Fedde Repert. Beih. 57 (1929) t. 63, nr. 245.

Two recently examined collections from the Department of San Martín in Peru are undoubtedly referable to *Ornithidium Tafallae* (described as *Scaphyglottis Tafallae*) which is represented in the Ames Herbarium by a series of drawings with a floral analysis from the Reichenbach Herbarium in Vienna. Apparently the only difference is that Reichenbach's drawing shows a sharply three-lobed anterior portion of the lip (described as obtusely three-lobed), whereas the Peruvian specimens have at most an obscurely 3-lobulate apical portion. The Peruvian collections show that the species is a large sprawling plant with unifoliate pseudobulbs at intervals of 1 to 19 cm. surrounded on each side by one or two pairs of leaf-bearing sheaths and with widely spreading branches in the axil of the sheaths below the pseudobulb. The leaf-blades vary from about 4 to 21 cm. in length and they are often as much as 4 cm. in width.

The Colombian *Ornithidium dichotomum* is surely synonymous with this species, although it has somewhat smaller leaves than the usual form of *O. Tafallae* and the terminal portion of the lip is only obscurely indented on each side or subtrilobed, as in the Peruvian specimens. The flowers of this form are noted as rosy white, whereas those of the Peruvian specimens are described as "cream" or "cream-green."

San Martín: Zepelacio, near Moyobamba, at 1200-1600 meters altitude, epiphyte in forest, January 1934, *G. Klug 3544;* same locality, at about 1100 meters altitude, June 1934, *Klug 3694.*

Maxillaria tenuis *C. Schweinfurth sp. nov.*

Herba epiphytica, tenuis. Pseudobulbi aggregati, in sicco cylindracei, complanati, unifoliati. Folium petiolatum; lamina linearis, acuta, basi cuneata, coriacea. Scapi basales, perbreves, uniflori, pedunculo vaginis nonnullis tubulatis omnino tecto. Flos pro planta grandis. Sepalum dorsale lineari-lanceolatum, complicato-acutum, basi concavum. Sepala lateralia lanceolato-linearia, leviter obliqua, acuta, mentum breve formantia. Petala oblique lineari-triangularia, acuminata. Labellum perbreve, lateribus inferioribus erectis, supra medium profunde trilobatum; lobi laterales perangusti, in apicem liberum ovato-rotundatum terminantes; lobus medius triangulari-ovatus, acuminatus, multo incrassatus. Columna parva, in pedem brevem extensa.

Plant small, slender, epiphytic. Roots fibrous, filiform, glabrous, whitish, numerous. Rhizome apparently abbreviated. Pseudobulbs aggregated, cylindric, finely rugose-striate and often oblique in the dried specimen, complanate, unifoliate, about 2.3 cm. or less long, surrounded and surpassed by relatively large distichous pustulose triangular sheaths which waste into fibres. Leaf petioled; lamina linear, sharply acute, cuneate below, coriaceous, with the mid-nerve sulcate above and prominently carinate beneath, about 14 cm. or less long, up to 8 mm. wide; petiole short, slender, deeply channelled, about 1.5 cm. or less long. Scapes lateral, basal, very short, 1-flowered; peduncle entirely concealed by a few loose tubular imbricating sheaths, about 3.2 cm. high; pedicellate ovary about 1.2 cm. long. Flower white and yellow, large for the plant. Dorsal sepal linear-lanceolate, complicate-acute, apiculate, dorsally lightly carinate near the apex, concave near the base, about 2.7 cm. long, almost 4 mm. wide below. Lateral sepals lanceolate-linear, lightly oblique, acute, apiculate, forming with the short column-foot an inconspicuous mentum, about 2.7 cm. long, 3–4 mm. wide at the base. Petals obliquely linear-triangular, acuminate, about 2.45 cm. long and 2.8 mm. wide near the base. Lip relatively very short, erect, parallel to the column, lightly recurved and about 9.5 mm. long, with upcurved sides in natural position, sessile, sharply 3-lobed about two thirds the distance from the base, elliptic-ovate in outline when expanded; lateral lobes erect, narrow, terminating in a short ovate-rounded free portion; mid-lobe triangular-ovate, short-acuminate, very fleshy and minute-papillose, about 4 mm. long; disc through the center of the lower half with a longitudinal thickening which becomes a conspicuous fleshy oblong sulcate callus above. Column very small, lightly arcuate, about 5.5 mm. long at the back, produced into a short foot.

Florally this species is very close to *Maxillaria ochroleuca* Lodd. ex Lindl., but vegetatively it is very much smaller with acute leaves. It is apparently similar to *M.*

taracuana Schltr. vegetatively, but has much longer sepals and a dissimilar lip. The small size of the plant and the linear sharp-pointed leaves of *Maxillaria tenuis* are unusual.

Loreto: Mishuyacu, near Iquitos, at 100 meters altitude, epiphyte in forest, February-March 1930, *G. Klug 1045* (Type in U.S. Nat. Herb. No. 1456126).

Maxillaria vandiformis (*Schltr.*) *C. Schweinfurth comb. nov.*

Camaridium vandiforme Schlechter in Beih. Bot. Centralbl. 42, Abt. 2 (1925) 137.

Although the type of *Camaridium vandiforme* came from Brazil (Amazonas), several collections from eastern Peru are referable to this concept. In these specimens the leaves show greater range in size than that given for the type, the length being commonly shorter than the cited minimum of 12 cm. and only rarely reaching the stated maximum of 18 cm.; also they are sometimes 8 mm. in width (as contrasted with 5–6.5 mm., as cited). The flowers appear to be slightly larger than those described, the lateral sepals being 1.5–1.7 (instead of 1.4) cm. long. Moreover, all of the sepals are acute or short-acuminate (not subobtuse). Finally, the lip is complicate-acute (rather than truncate and obtuse with an apicule) and the pedicellate ovary attains 2.8 cm. in anthesis.

It is possible that the Colombian *Camaridium equitans* Schltr., which is an earlier concept, may prove to represent the same species, but the description of its leaves and especially the illustration of its lip (Schltr. ex Mansf. in Fedde Repert. Beih. 57 (1929) t. 63, nr. 242) show differences.

Amazonas: near Napo, at about 100 meters altitude, August 2, 1924, *G. Tessmann 3737*.—Loreto: lower Río Huallaga, Santa Rosa, at 155–210 meters altitude, on tree trunk, November 11, 1929, *Llewelyn Williams 4908* (sterile specimen); vicinity of Iquitos, at 100 me-

ters altitude, epiphyte in dense forest, January–February 1937, *G. Klug 10076.*—San Martín: Chazuta, Río Huallaga, at about 260 meters altitude, in forest, flowers cream-color and dark violet, April 1935, *G. Klug 4101.*

Maxillaria verrucifera *C. Schweinfurth sp. nov.*

Herba epiphytica, robusta, magna. Pseudobulbus ovoideus vel cylindraceo-pyriformis, unifoliatus. Folium magnum, petiolatum; lamina oblonga vel elliptico-oblonga, plusminusve acuta, basi cuneata; petiolus elongatus, conduplicatus. Inflorescentia perbrevis, pedunculo cum ovario vaginis distichis ovatis imbricatis omnino tecto. Flos pro planta parvus. Sepala basi concava, lateribus revolutis. Sepalum dorsale oblongo-ovatum, abrupte complicato-acutum. Sepala lateralia similia, obliqua. Petala obovato-oblonga, subacuta, quam sepala paulo breviora. Labellum super medium trilobatum, expansum in circuitu late ellipticum; lobi laterales angusti, apice libero rotundato; lobus medius suborbicularis, incrassatus, verrucosus, supra recurvus; discus parte inferiore incrassatione lineari ornatus. Columna erecta, antice sulcata, cum pede perbrevi.

Plant large, robust, epiphytic. Roots fibrous, glabrous, elongate. Pseudobulb apparently ovoid or cylindric-pyriform (imperfect in the specimen), plurisulcate when dry, unifoliate, about 5 cm. long, apparently rather compressed, surrounded by the fibres of sheaths. Leaf large, petioled; lamina oblong or elliptic-oblong, acute or subacute, about 50.8 cm. long and 5.8 cm. wide, cuneate below, coriaceous, shining above and dull beneath, with the mid-nerve sulcate above and strongly carinate beneath; petiole elongate, stout, conduplicate or deeply channelled, about 17.3 cm. long. Inflorescence (separated in my specimen) very short, 1-flowered; peduncle with pedicellate ovary about 2.9 cm. long, entirely concealed by six broadly ovate distichous imbricating sheaths.

Flower rather small for the plant, "brown-yellow and wine-red," with the lip apparently maculate. Sepals with revolute margins, concave at the base. Dorsal sepal oblong-ovate, abruptly complicate-acute, about 2.2 cm. long and 9 mm. wide when expanded. Lateral sepals similar, obliquely ovate-oblong, abruptly complicate-acute, about 2.3 cm. long and 10 mm. wide, adnate to the abbreviated column-foot forming a very short mentum. Petals concave, obovate-oblong, lightly oblique, subacute, about 2 cm. long and 10 mm. wide above the middle. Lip large, erect, parallel to the column and recurved in natural position, sharply 3-lobed above the middle, broadly-elliptic in outline when expanded, about 1.9 cm. long and 1.2 cm. wide across the middle; lateral lobes erect, narrow with an abbreviated rounded crenulate free apex; mid-lobe suborbicular from a very short claw, abruptly recurved above, undulate and finely crenulate-erose on the margins, fleshy and densely verrucose except near the margins, the warts being especially conspicuous, dense and enlarged above the middle; disc through the lower part with a median linear-oblong thickening which terminates in a prominent rounded callus. Column rather straight, sulcate in front, about 1.1 cm. high at the back, with a very short foot.

This species seems to be allied to *Maxillaria Huebneri* Schltr., but differs in having a markedly larger pseudobulb, a much larger leaf and petiole and a somewhat dissimilar lip.

The specific name is in allusion to the verrucose mid-lobe of the lip.

Loreto: vicinity of Iquitos, at 100 meters altitude, on living tree in dense forest, December 1936, *G. Klug 10047* (TYPE in Herb. Ames No. 61910).

Maxillaria xantholeuca *Schltr.* var. **peruviana** *C. Schweinfurth var. nov.*

Recently I have examined two collections of a Peruvian orchid which appear to be florally inseparable from the Ecuadorian *Maxillaria xantholeuca* described in Fedde Repert. Beih. 8 (1921) 98, with a floral analysis in Fedde Repert. Beih. 57 (1929) t. 97, nr. 381. Except for a difference in the color of the flowers, the discrepancies are entirely vegetative. Although these two collections show a rather wide divergence from one another in the vegetative parts, both of them have the rhizome adorned with shallow spreading infundibuliform sheaths, whereas that of the typical plant is described merely as "vaginis pluribus obtecto."

One of these Peruvian collections (*Weberbauer 7912*) has a loosely branching rhizome and pseudobulbs 3 to 7 cm. distant (the typical form has them about 3 cm. apart). Its leaves range from elliptic-oblong to oblong and when mature are 4.5–8.2 cm. long and 0.9–1.5 cm. wide (those of the type cited as oblong, 3.5–4 cm. long and 1.3–1.5 cm. wide). The inflorescences also are somewhat longer than specified.

In the other collection (*Killip & Smith 23155*), the rhizome is unbranched and bears the pseudobulbs at intervals ranging from about 0.5 to 4 cm. The leaves of this collection are elliptic to oblong-elliptic and vary from 6.7 to 10.3 cm. long and from 1.5 to 2.1 cm. wide.

Cuzco: Prov. of Calca, Lares Valley above Mantoc, at 2600–2700 meters altitude, on rocks, "sepals reddish brown with greenish points," March 8, 1929, *A. Weberbauer 7912* (TYPE in Herb. Field Mus. No. 605243; isotype in Herb. Ames No. 61951).—Ayacucho: Aina, between Huanta and Río Apurimac, at 750–1000 meters altitude, epiphyte in open woods, "segments light green, lip darker, column paler," May 7, 17, 1929, *E. P. Killip & A. C. Smith 23155.*

Maxillaria xanthorhoda *Schlechter* in Notizbl. Bot. Gart. Mus. Berl. 7 (1918) 279; ex Mansfeld in Fedde Repert. Beih. 58 (1930) t. 52, nr. 205.

Judging from a photographic record in the Ames Herbarium of the type of this species, the leaves appear to be oblong-elliptic, not ligulate as described; they measure scarcely more than 3 cm. in length and 1 cm. in width, whereas they are described as 3–4.5 cm. long and almost 8–11 mm. wide.

Of further interest is an imperfect flower in a packet labelled "Maxillaria xanthorhoda, Hort. Dahlem" in the handwriting of Dr. R. Mansfeld. This shows a lateral sepal which is neither obovate nor oblong-obovate (as described and illustrated), but lanceolate-oblong as in *M. variabilis* Batem. The other sepals and the lip are too fragmentary to afford any evidence. Perchance this flower was mistakenly derived from a specimen of *M. variabilis*, for it was stated on the packet to have been collected in April 1933, whereas the type of *M. xanthorhoda* was said to bloom in April 1918.

Maxillaria xylobiiflora *Schlechter* in Fedde Repert. 27 (1929) 76.

Several Peruvian collections prove to be referable to the Bolivian *M. xylobiiflora.* There appear, however, to be certain discrepancies which should be enumerated.

The pseudobulbs are apparently ellipsoid-cylindric with an abrupt linear complanate beak (in the dried specimen), rather than linear and slightly narrowed above as described. The inflorescences are mostly shorter than the leaves, not almost equaling them as cited. The median callus on the disc of the lip extends to well above the middle, rather than almost to the middle as stated, and has a simple, acute, not a 4-denticulate apex.

Ayacucho: Aina, between Huanta and Río Apurimac, at 750-1000 meters altitude, epiphyte in open woods, floral segments pinkish white to brownish (mature and withered), *E. P. Killip & A. C. Smith 22596, 22611, 23163.*

EXPLANATION OF THE ILLUSTRATIONS

Plate XIV. Maxillaria cornuta *C. Schweinf.*
1, plant, natural size. 2, flower without lip, expanded, twice natural size. 3, lip from above, natural position, twice natural size. 4, lip and column from side, natural position, three times natural size.

Plate XV. Maxillaria cuzcoensis *C. Schweinf.*
1, plant, one half natural size. 2, flower without lip, expanded, one and one half times natural size. 3, lip from side, natural position, one and one half times natural size. 4, lip from above, natural position, twice natural size.

Plate XVI. Maxillaria funicaulis *C. Schweinf.*
1, plant, one half natural size. 2, flower from side, natural position, two and one half times natural size. 3, dorsal sepal, expanded, twice natural size. 4, petal, twice natural size. 5, lateral sepal, twice natural size. 6, column and lip from side, natural position, two and one half times natural size. 7, lip from above, partially expanded, four times natural size.

Plate XVII. Maxillaria parvibulbosa *C. Schweinf.*
1, plant, natural size. 2, flower without lip, expanded, natural size. 3, lip from above, expanded, three times natural size.

Plate XVIII. Maxillaria tenuis *C. Schweinf.*
1, plant, natural size. 2, flower, expanded, twice natural size. 3, lip from above, expanded, four times natural size.

Plate XIX. Maxillaria verrucifera *C. Schweinf.*
1, plant, one half natural size. 2, flower on peduncle from side, natural position, natural size. 3, dorsal sepal, partially expanded, twice natural size. 4, petal, twice natural size. 5, lateral sepal, partially expanded, twice natural size. 6, lip from above, expanded, twice natural size. 7, column and lip from side, natural position, twice natural size.

Plate XIV

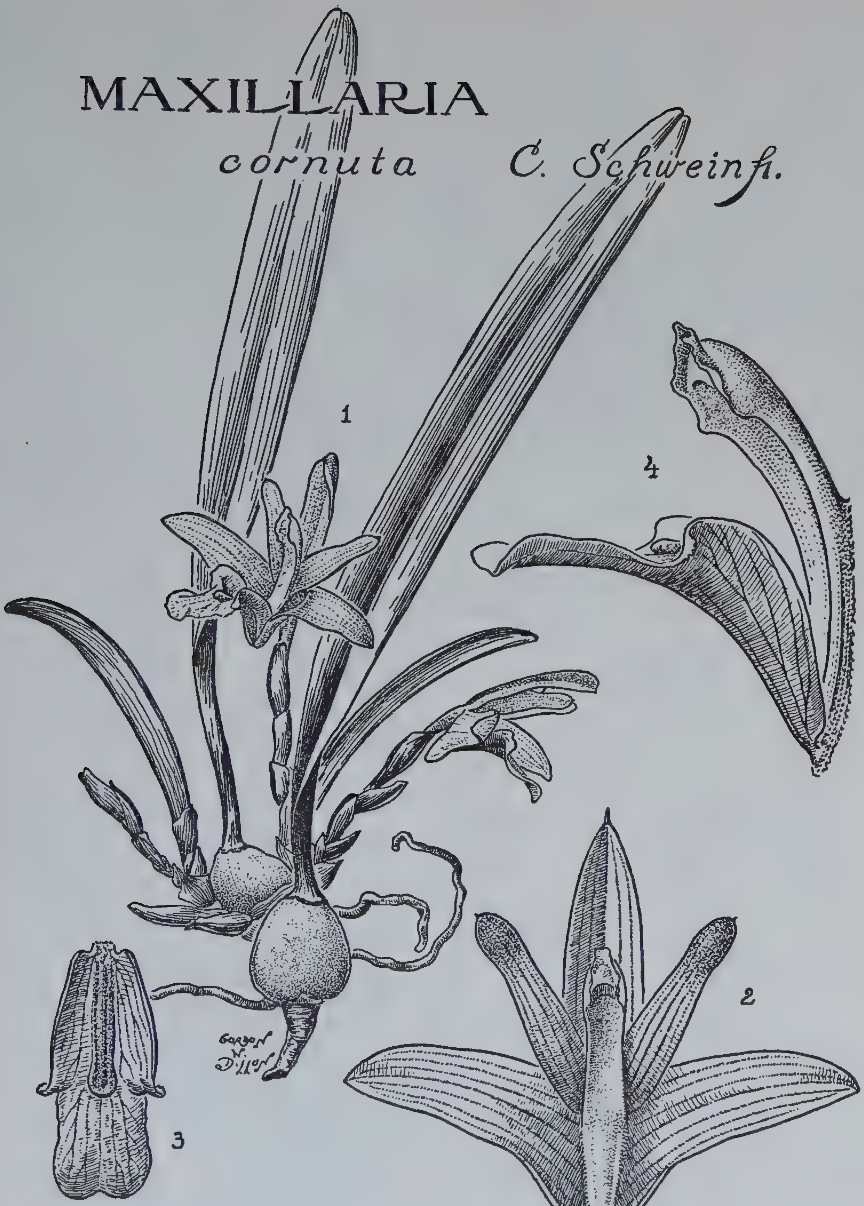
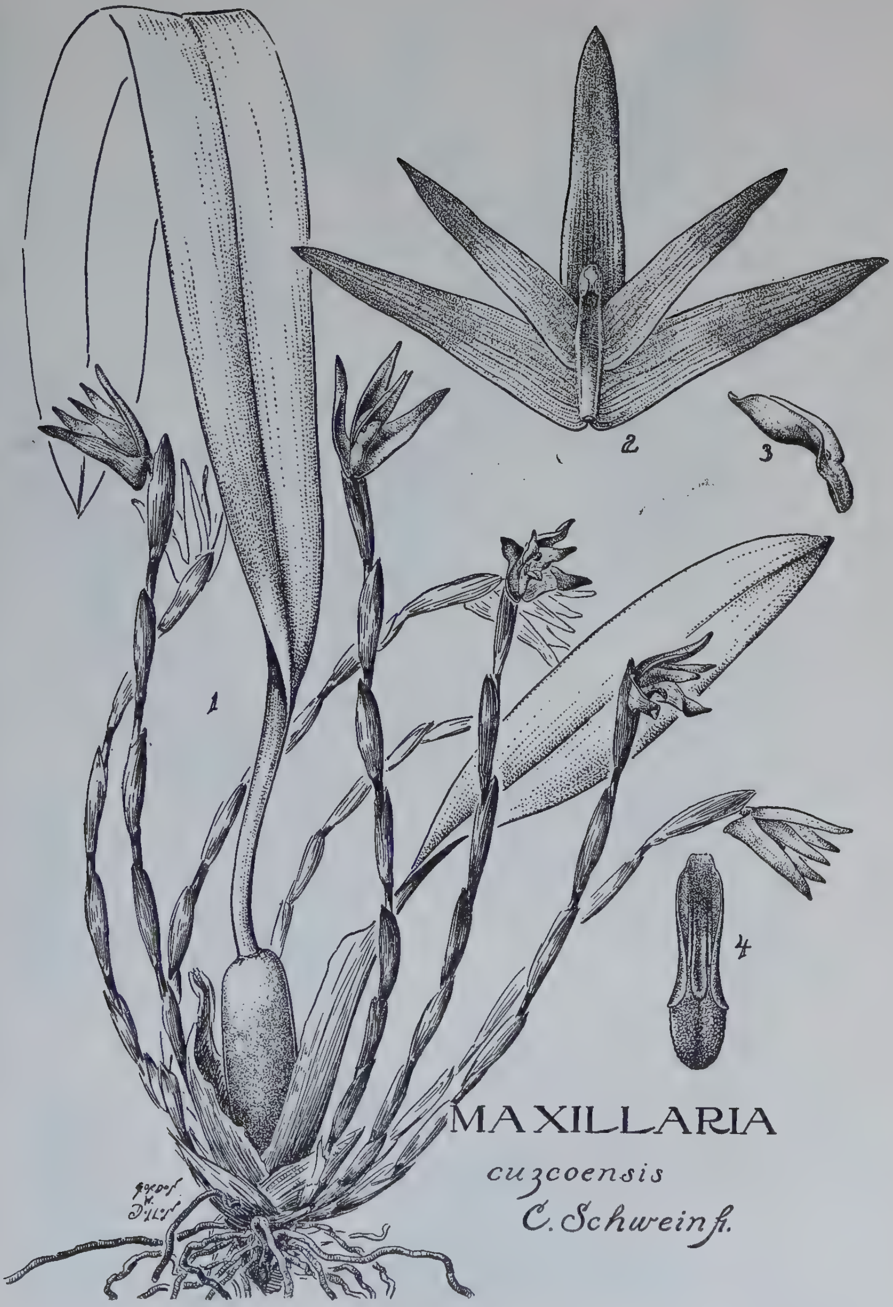
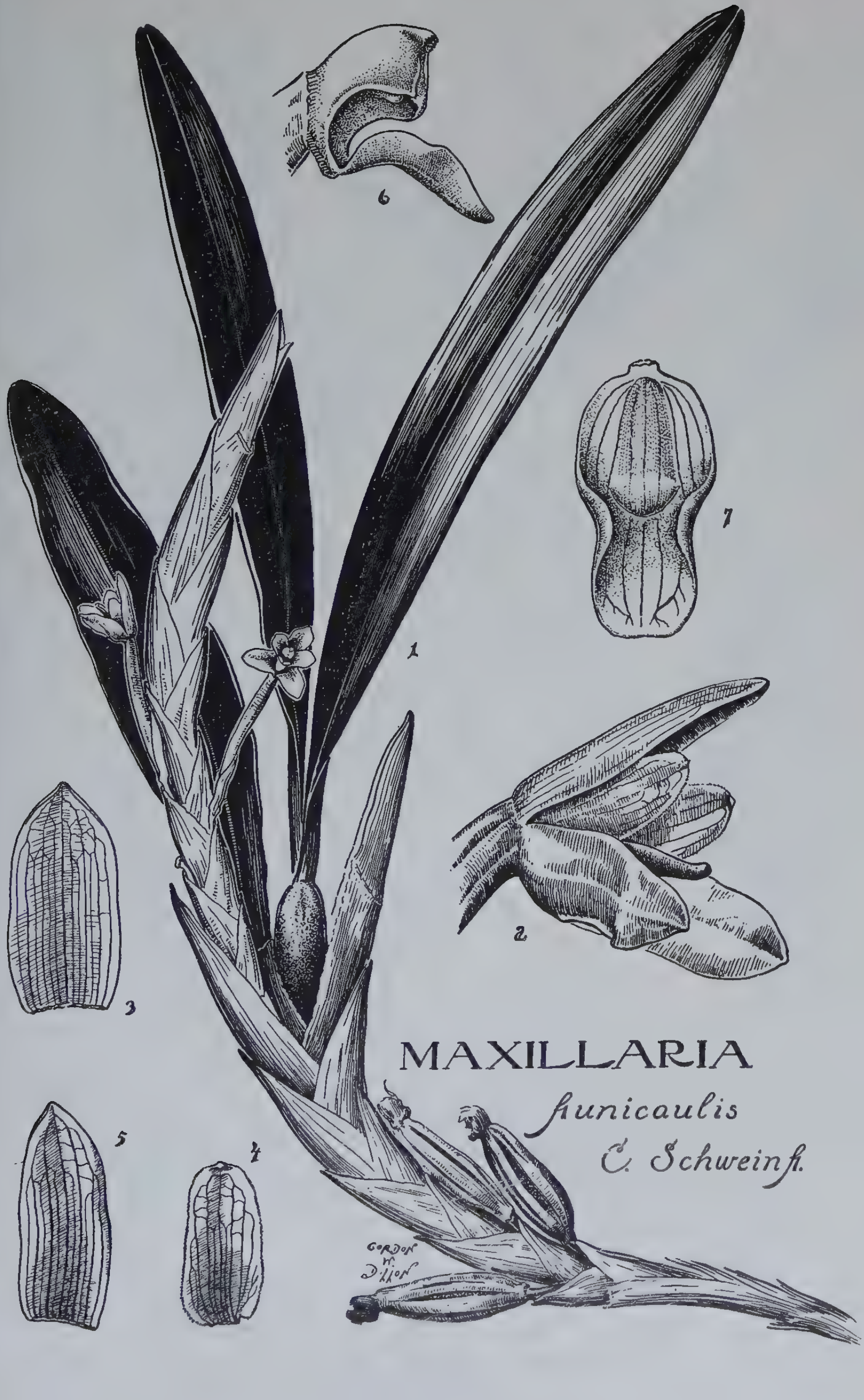


PLATE XV



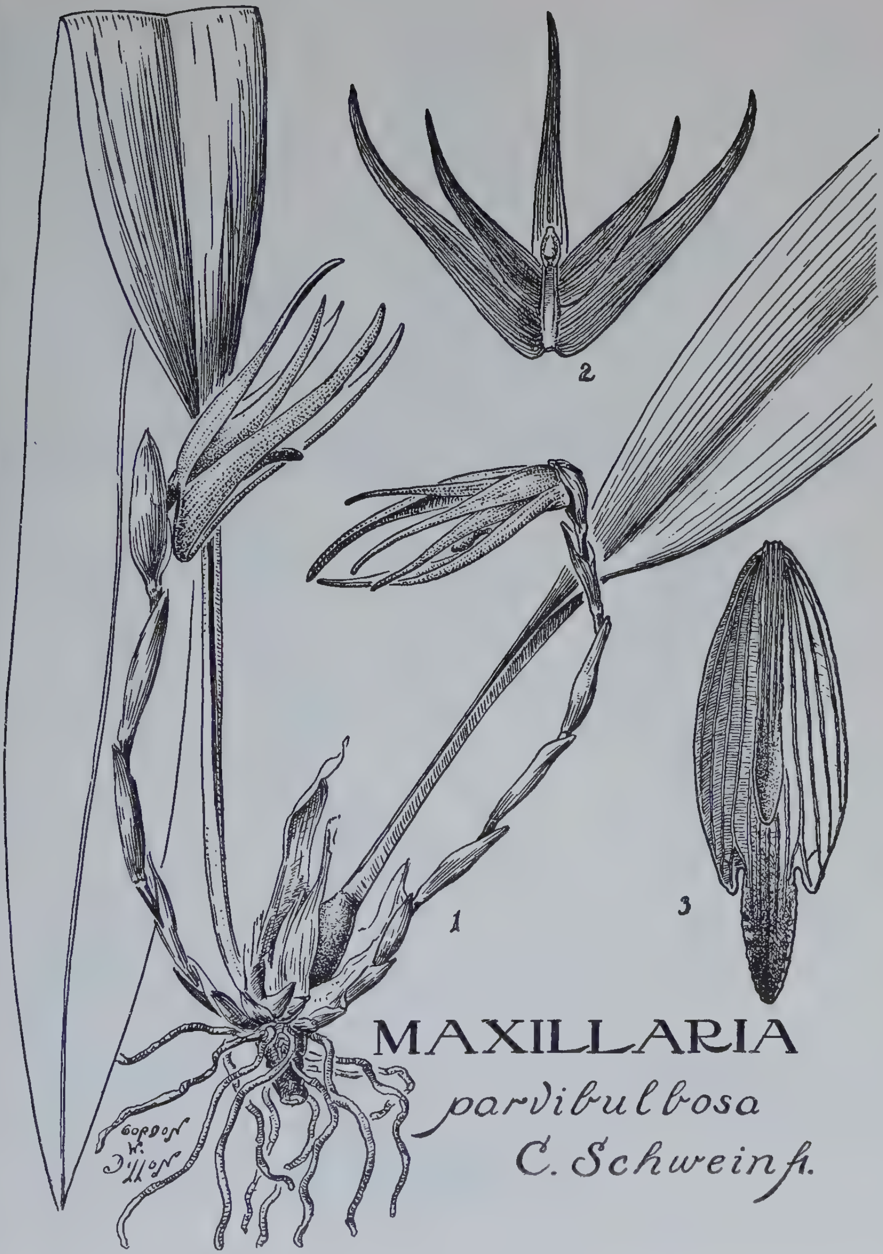
MAXILLARIA
cuzcoensis
C. Schweinf.

Plate XVI



MAXILLARIA
funicaulis
C. Schweinf.

PLATE XVII



MAXILLARIA
parvibulbosa
C. Schweinf.

Plate XVIII

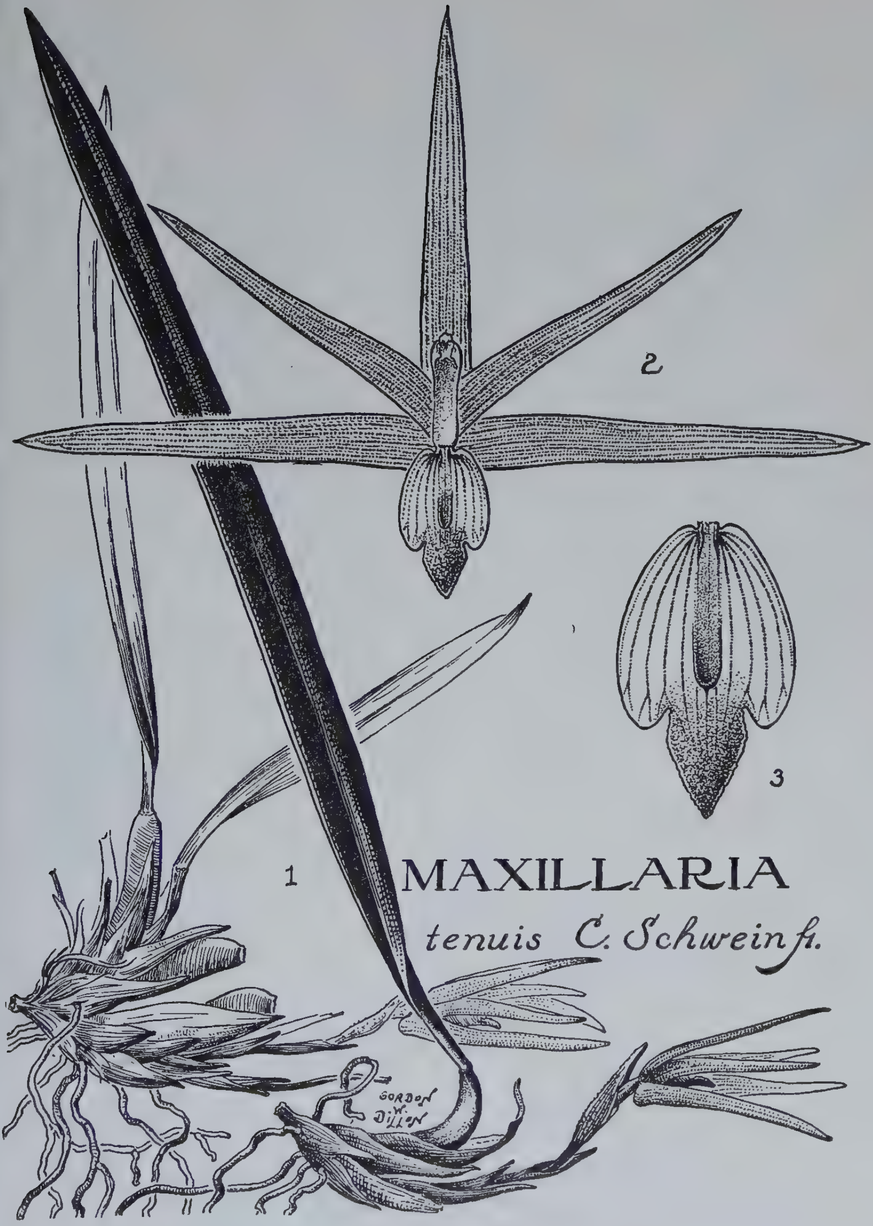
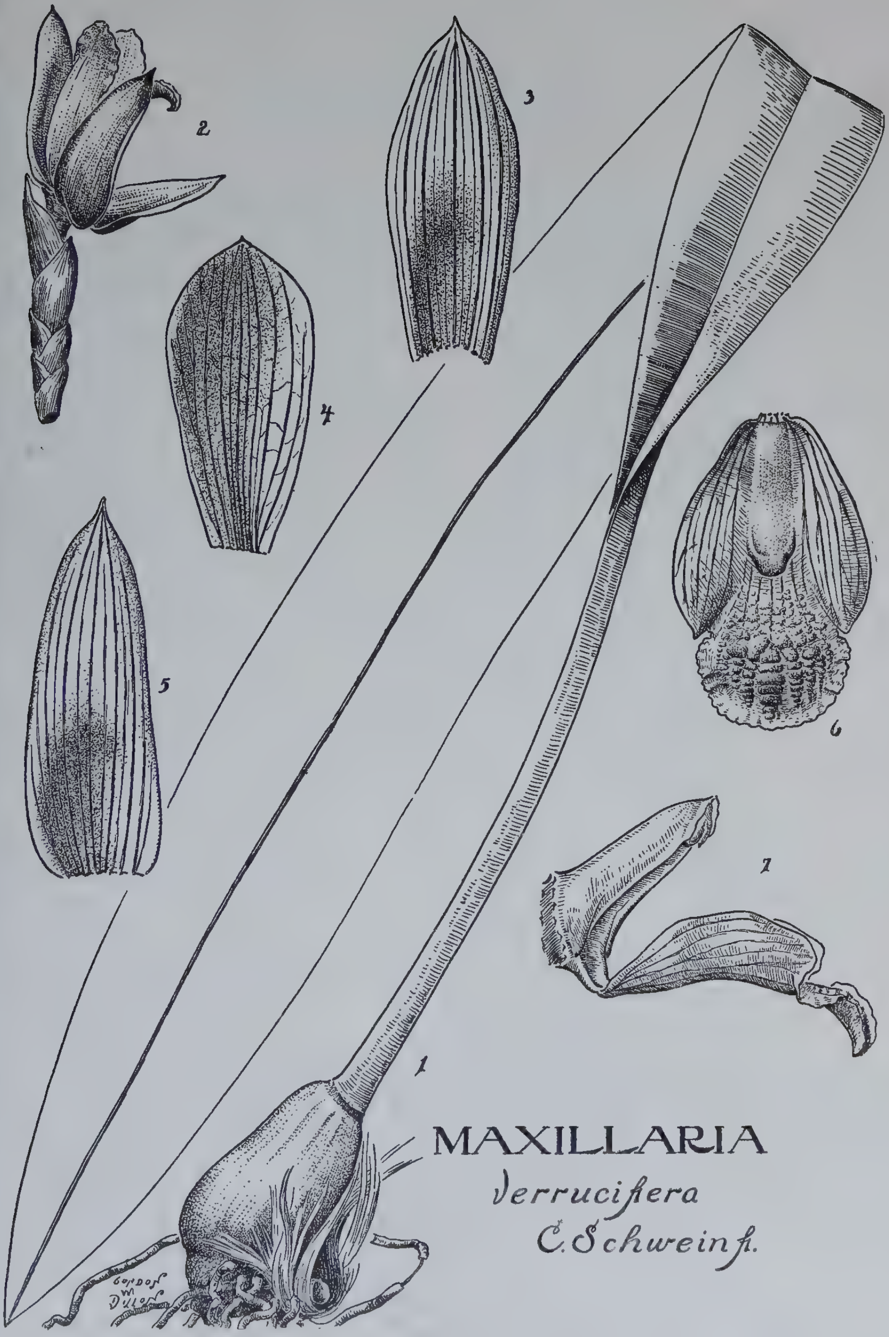


Plate XIX



MAXILLARIA
verrucifera
C. Schweinf.

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ERRATA ET ADDENDA

page 19, line 3
for 2 read t. 66

page 50, line 12
for *Linneaus* read *Linnaeus*

page 52, line 10
for makes read make

page 187, line 25
for type read Type

page 187, line 34
for (1835) read (1836)

page 188, line 3
for Rodriguez read Rodrigues

page 193, line 28
for **Gongora maculata** *Lindley* var. **bufonia** (*Lindl.*) *C. Schweinfurth comb. nov.* read **Gongora maculata** *Lindley* var. **leucochila** (*Lindl.*) *C. Schweinfurth comb. nov.*

In selecting a varietal epithet, the existence of a previous name in the varietal rank was overlooked.

page 215, line 7
for **Koelensteinia** read **Koellensteinia**

page 224, line 28
for *var. nov.* read *comb. nov.*

page 227, line 8
for *var. nov.* read *comb. nov.*

page 232, line 22
for *var. nov.* read *comb. nov.*

page 235, line 11
for *var. nov.* read *comb. nov.*

page 250, line 34
for roseo read rosei

page 256, line 25
for et parallela read parallela et

page 259, line 21
for *tenuicalcar* read *tenuicalcari*

page 278, after line 11 insert
Haec varietas foliis angustioribus et floribus albis et columna multo breviore a specie differt.

page 279, line 21
for *var. nov.* read *comb. nov.*

page 250, line 23
for *var. nov.* read *comb. nov.*

page 285, line 21
for *var. nov.* read *comb. nov.*

page 294, before line 1 insert
Haec varietas foliis longioribus et florum colore a specie differt.

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